2. The Merger Will Not Reduce Competition in Markets for Internet Services.

In addition to these familiar forecasts that the merged entity will engage in downstream discrimination against IXCs, the Big Three offer a new twist on the same theme, arguing that the combined company will be in a position to harm competition for broadband and Internet services by discriminating against rival ISPs in access to needed inputs like xDSL. This effort by the Big Three to throw stones at the GTE-Bell Atlantic merger is the height of irony, given MCI WorldCom's recent effort to monopolize the Internet backbone market -- an effort that was halted by this Commission and other regulators -- and AT&T's current attempt to secure exclusive control over a true unregulated Internet bottleneck into one-third of American homes. In any event, this argument fails for several reasons.

First, as is the case with respect to interLATA service, any incentive for ILECs to discriminate in the provision of necessary inputs to ISPs is already addressed by FCC regulations and oversight. The Commission addressed these alleged bottleneck concerns long ago in the Computer III proceedings, and competition has thrived under the rules that were set in place at that time.¹¹³

Second, the suggestion that ILECs control a bottleneck facility with respect to Internet traffic is unfounded. MCI WorldCom's own experts concede that any bottleneck concern "is ameliorated if other technologies emerge to provide broadband access for ISPs." One such

¹¹³ Amendment of Sections 64.702 of the Commission's Rules and Regulations, Report and Order, 104 F.C.C.2d 958 (1986).

¹¹⁴ Baseman-Kelley at ¶ 94 n.67.

alternative technology is cable modem access, which is rapidly being deployed today and which is the core of AT&T's high-profile investment strategy through its TCI acquisition. Cable modem access, of course, is not subject to the same regulatory requirements that apply to ILECs, and the AT&T-TCI merger is thus an example of an area where these bottleneck concerns actually are legitimate. Moreover, other high-speed means of accessing the Internet are already available. Larger customers can purchase dedicated connections directly from Internet backbone providers. As long as the backbone market remains competitive, therefore, there is no real threat of Internet monopolization. And, as explained above, this merger will actually help ensure that the backbone market remains competitive.

Finally, MCI-WorldCom's claim that the merged entity would somehow have a greater incentive and ability to engage in discriminatory self-dealing as a result of GTE's ISP presence ignores fundamental and obvious differences between the Internet backbone market and the ISP market. The Internet backbone market was sufficiently concentrated -- with MCI and WorldCom controlling substantial shares of the market -- that the divestiture of MCI's Internet assets was necessary to avoid a significant increase in the incentive to engage in discriminatory conduct. No similar danger exists here. Unlike the Internet backbone market, the ISP market is atomized and fully competitive with thousands of participants (with GTE and Bell Atlantic holding an insignificant position), 115 and the ISP access market does not feature the sort of delicate system of competitive peering between rival unregulated networks that characterizes the

¹¹⁵ See Public Interest Statement at 17.

Internet backbone market.¹¹⁶ Indeed, the fact that GTE's and Bell Atlantic's ISP affiliates hold such modest market shares is compelling evidence that the alleged discrimination either does not occur or is utterly ineffective.

C. Any Theoretical Concern Is Resoundingly Outweighed by the Merger's Broad Procompetitive Benefits.

For the reasons set forth above, the opponents' warnings that dire anticompetitive consequences will flow from the merger of Bell Atlantic and GTE are groundless. It bears emphasizing, however, that even were the Commission persuaded by some of the opponents' arguments, these concerns would not be sufficient to support a finding that the merger is not in the public interest. The Commission has stated on numerous occasions that it looks at both sides of the ledger in evaluating the competitive impact of a proposed merger -- not only at alleged competitive harms, but also at competitive benefits -- and that, accordingly, "[a] merger will be procompetitive if the harms to competition . . . are outweighed by benefits that enhance competition." The critical inquiry, therefore, is not whether the merger would result in *any* theoretical loss of potential competition, no matter how minor or geographically isolated, but instead whether "the transaction *on balance* serves the public interest, convenience and necessity." 118

¹¹⁶ See Crémer-Laffont Declaration ¶¶ 61-63.

¹¹⁷ Bell Atlantic/NYNEX Order ¶ 2.

¹¹⁸ *Id.* ¶ 157 (emphasis added).

This merger confirms the wisdom of the Commission's holistic approach to assessing competitive impact: As explained in Part I above, consumers across the country will receive numerous, widespread, and significant benefits as a result of the merger, in markets for local, interLATA, Internet, and bundled services. This contrasts markedly with the Bell Atlantic/NYNEX merger, in which the efficiencies generated by the merger were confined to many fewer product markets and a much smaller geographic area. Our opponents would have to establish that the merger would produce severe and widespread anticompetitive consequences to offset those weighty benefits. And even were one to accept their claims that the merger would cause some incremental effect as a result of the removal of a potential competitor in pockets of Pennsylvania or Virginia, or of a marginal increase in a supposed incentive to discriminate, these slight anticompetitive effects would be emphatically outweighed by the nationwide benefits that will flow from this merger.

III. THE MISCELLANEOUS ALLEGATIONS OF BAD ACTS BY GTE AND BELL ATLANTIC ARE NOT GERMANE TO THIS PROCEEDING, ARE PROPERLY RESOLVED ELSEWHERE, AND ARE MERITLESS.

In what amounts to a tacit acknowledgment of the weakness of their economic arguments against the merger, the Big Three and other commenters attempt to shade the Commission's view of the proposed transaction by filling their pleadings with a litany of unrelated and unsubstantiated allegations against GTE and Bell Atlantic. They argue that Bell Atlantic has failed to honor the conditions imposed by the Commission in approving the Bell

¹¹⁹ Compare id. ¶¶ 160, 168, 173, 176.

Atlantic/NYNEX merger, and that both companies have committed various other bad acts. These allegations should not detain the Commission. As the Commission repeatedly has recognized, transfer application proceedings are not a forum for airing pre-existing grievances that do not bear on the central question whether *this merger* is in the public interest. That conclusion has particular force where, as here, all of these grievances -- including those relating to the NYNEX commitments -- are already the subject of ongoing proceedings before the Commission and other regulators. Although Bell Atlantic and GTE are entirely confident that the various complaints will be comprehensively addressed and rejected in those other proceedings, we offer brief responses to these non-germane allegations in the attached Appendices J and K, which show that Bell Atlantic has fulfilled the Bell Atlantic/NYNEX conditions and that the sundry other complaints are without merit.

IV. THE COMMISSION SHOULD REJECT ALL OF THE CONDITIONS PROPOSED BY THE APPLICANTS' COMPETITORS.

In all, the various merger opponents have proposed some three dozen conditions that, in their view, should be imposed on GTE-Bell Atlantic in the event the Commission permits the merger to go forward. All of these proposals should be rejected.

Many of the proposals bear no relation whatsoever to the claimed concerns of the merger, and are instead bald attempts by various parties to exact their "pound of flesh" from the

¹²⁰ See, e.g., SBC/PacTel Order ¶ 38; Bell Atlantic/NYNEX Order ¶ 290; In re Applications of Turner Broadcasting System, Inc., FCC 96-405, 11 F.C.C.R. 19595, at ¶ 33 (Oct. 9, 1996); In re Bell Atlantic Mobile Systems, Inc., 10 F.C.C.R. 13368, at ¶ 37 (May 14, 1995); In re Applications of Craig O. McCaw and AT&T, 9 F.C.C.R. 5836, at ¶ 123 (Sept. 19, 1994), aff'd sub nom SBC Communications. Inc v. FCC, 56 F.3d 1484 (D.C. Cir. 1995).

Applicants. Prominent in this category, for example, are the standardized conditions that the law firm of Swidler Berlin Shereff Friedman proposes on behalf of a group of CLECs. 121 Most, if not all, of these conditions flow from those carriers' interconnection-related grievances; as we have explained in Part III and the corresponding appendices, those complaints are not germane to this proceeding, and in any event lack merit. The content of interconnection agreements, moreover, should not be determined in this license-transfer proceeding, but rather through the system of case-specific negotiation and arbitration established by Congress in the 1996 Act. Complaints about alleged non-fulfillment of any such agreement likewise should be dealt with in the appropriate proceedings.

Those proposals that do purport to relate to the merger also should be rejected. *First*, the Commission should decline to impose its own set of performance conditions on the new company.¹²² Every state public utilities commission comprehensively and diligently monitors service quality performance, and will continue to do so after the merger. There simply is no need for the Commission to devote resources to duplicating that effort.

Second, a forced divestiture of assets, which is proposed in varying forms by some opponents, 123 could only possibly be justified in the case of a horizontal merger between direct

See, e.g., Comments of Freedom Ring Communications, LLC, d/b/a BayRing Communications at 20-31; Comments of CTC Communications Corp. at 28-31; Comments of RCN Telecom Services, Inc. at 21-28.

¹²² See, e.g., Comments of CoreComm (hereafter CoreComm) at 31; Comments of KMC at 28; Comments of USXchange at 26.

¹²³ See, e.g., MCI WorldCom at 56-57 (GTE should be required to divest in-region interLATA operations); Comments of Focal at 21 (same); Comments of Level 3 Communications at 12-15

competitors with significant overlapping operations. As we have shown in the Application and in these Reply Comments, however, this merger presents no issues of direct competition at all.¹²⁴ And, as discussed, the *potential* competition arguments advanced by our competitors are shallow at best. Accordingly, there is no basis whatsoever for the Commission to condition its approval on a divestiture of either company's assets.

Finally, the Commission should reject the numerous proposals for imposing special market-opening conditions on the new company.¹²⁵ There is no public-policy rationale for imposing new regulatory requirements on GTE-Bell Atlantic that go beyond the legal obligations carefully crafted by Congress in the 1996 Act. As we have shown, the merger will not result in any loss of a significant and irreplaceable source of potential competition, or indeed cause any diminution of competition in a relevant market.¹²⁶ In particular, the special concerns that underlay the Bell Atlantic-NYNEX commitments are manifestly absent here. Indeed, because of the expansion of competition into new markets and the other very real procompetitive benefits

⁽new company should be required to divest "bottleneck facilities" such as loops and wire centers).

We addressed the overlaps of wireless territories in the Application and Public Interest Statement. Apart from the self-serving suggestion of Supra Telecommunications that the Applicants should be directed to sell their overlapping assets to Supra, *see* Comments of Supra Telecommunications at 30, the overlaps have rightly elicited no statements of concern from our opponents.

¹²⁵ See, e.g., MCI WorldCom at 57 (Commission should impose same conditions imposed in Bell Atlantic/NYNEX Order); CoreComm at 29 (Commission should require new company to develop immediately a new OSS/EDI system).

¹²⁶ See, e.g., Bell Atlantic/NYNEX Order ¶¶ 177-79.

that will flow directly from the combination of GTE and Bell Atlantic, this merger itself represents perhaps the best hope of achieving the market-opening objectives of the 1996 Act.

V. CONCLUSION

For all the foregoing reasons, and the reasons stated in GTE and Bell Atlantic's Public Interest Statement, the Application for Transfer of Control should be approved.

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In the Matter of)	
GTE CORPORATION, Transferor And BELL ATLANTIC CORPORATION, Transferee)))	CC Docket No. 98-184
For Consent to Transfer of Control.)	
)	

Declaration of David J. Teece On behalf of GTE Corporation and Bell Atlantic Corporation

December 18, 1998

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I. PURPOSE OF DECLARATION

A. Purpose of Declaration

1. In this declaration I show that the merger of Bell Atlantic and GTE will have substantial pro-competitive effects, and is, therefore, in the public interest. Specifically, the merger of GTE and Bell Atlantic will have six specific, pro-competitive benefits. First, this merger allows the applicants to combine their complementary product and skill sets particularly in advanced voice and data services and Internet services - and thus obtain the necessary competencies required to offer a national facilities-based bundled offering. Second, the merger will introduce a strong and effective competitor to local markets across the country. Third, the combined company will have the presence and resources to develop a truly national brand, and thereby enhance competition amongst the top tier of telecommunications providers. Fourth, the merger will produce significant economies of scale and scope, and therefore improve the cost competitiveness of the enterprise, as well as promoting consumer welfare through lower prices. Fifth, the ability to sell GTE's long distance and data capabilities through Bell Atlantic's sales channels will enhance the cost-competitiveness of the GTE data and long-distance network. Sixth, the merger will enhance the competitive standing of GTE's Internet backbone network thereby crimping any possible efforts to dominate this market.¹

A disproportionately large Internet backbone provider, or an oligopoly of backbone providers, could seriously harm competition through a strategy of targeted degradation in its peering connections with other unregulated backbone providers. See Jacques Crémer, Patrick Rey, and Jean Tirole, *The Degradation of Quality and the Domination of the Internet*, prepared for GTE Communications Corporation, April 8, 1998, at p.9. The Crémer-Rey-Laffont paper is cited, inter alia, in the Baseman-Kelley Declaration at 95, p. 54. See also Jean-Jacques Laffont, Patrick Rey, and Jean Tirole, *Network Competition: I. Overview and Non-discriminatory pricing*, RAND Journal of Economics Vol. 29, No. 1, Spring 1998 pp. 1-37, also cited by Baseman and Kelley.

2. The merger does not create anti-competitive effects as Bell Atlantic and GTE are generally not direct or potential competitors,² and the merger is not likely to increase discrimination by the combined ILECs in either vertically or horizontally related services.³ I therefore conclude that the merger of Bell Atlantic and GTE will strongly enhance competition and advance the interests of consumers. Accordingly, the companies' application should be approved.

B. Qualifications

3. I am Mitsubishi Bank Professor, Haas School of Business, and Director, Institute for Management, Innovation and Organization, University of California at Berkeley and Chairman of the Law & Economics Consulting Group. I have been a full professor at Berkeley since 1982. Prior to that, I was Assistant and then Associate Professor of Business Economics at the Graduate School of Business, Stanford University. I received my Ph.D. in Economics from the University of Pennsylvania in 1975. As an industrial organization economist, I have studied the economics of technological change, competition policy, and business strategy issues for over two decades. At UC Berkeley, I was the Co-founder of the Management of Technology Program, a joint program between the School of Business and College of Engineering, and the Consortium on Competitiveness and Cooperation, a multi-campus research program linking scholars at Berkeley, Stanford, Columbia, Harvard and Wharton who have interests in the long-run performance of the U.S. in the global economy. I am also Chairman of the Consortium for Research on Telecommunications Policy Program, a multi-campus research group with active nodes at UC Berkeley, the University of Michigan, and Northwestern University.

² See accompanying Declaration of Robert H. Gertner and John P. Gould on behalf of Bell Atlantic and GTE, hereinafter referred to as Gertner-Gould Declaration, at ¶ 8.

See accompanying Declaration of Robert W. Crandall and J. Gregory Sidak on behalf of Bell Atlantic and GTE, hereinafter referred to as Crandall-Sidak Declaration, and accompanying Declaration of Jacques Crémer and Jean-Jacques Laffont on behalf of Bell Atlantic and GTE, hereinafter referred to as Crémer-Laffont Declaration.

4. My research has been centrally concerned with the relationship between the structure of firms (especially the scope of their activities) and their performance, particularly the capacity to develop and introduce new technologies. I have had a special interest in innovation, organizational structure and antitrust. Relevant books include Economic Performance and the Theory of the Firm (1998), Strategy, Technology and Public Policy (1998), Antitrust, Innovation, and Competitiveness (1992, with T. Jorde) and The Competitive Challenge (1987). Relevant papers include, "Competition and Cooperation: Striking the Right Balance," California Management Review (Spring 1984, with T. Jorde); "Telecommunications in Transition: Unbundling, Reintegration, and Competition," Michigan Telecommunications and Technology Law Review, 4 (1995); and "Competition and Unbundling in Local Telecommunications: Implications for Antitrust Policy" (with Robert G. Harris and Gregory L. Rosston) published in Towards a Competitive Telecommunications Industry; Selected Papers from the 1994 Telecommunications Research Conference, Gerald Brock (ed.) (Lawrence Erlbaum Associates 1995). In previous submissions to the Department of Justice and the FCC, I have devoted considerable attention to studying the competitive dynamics of the telecommunications industry and to developing and implementing a methodology with which to assess the competitive environment. A copy of my curriculum vitae is attached as Attachment 1.

II. INTRODUCTION

- 5. The competitive landscape in telecommunications has changed dramatically in the past two decades. Prices have dropped and the U.S. has gone from effectively one provider (AT&T) with two primary services (local loop and long distance) to multiple technologies and multiple providers for each competing technology. Similarly, the needs of a typical consumer (business and residential) have changed dramatically over the same period: digitalization and the decrease in transmission costs have made it increasingly attractive to use telecommunications and data services, meanwhile service complexity has increased with the explosion of wireless, fax, data and Internet services.
- 6. What once was a very simple purchasing decision for consumers has become tremendously complicated. Consumers now face a plethora of barely understood technologies each touting its presumed superiority over other barely understood technologies: digital TDMA vs. CDMA PCS, "wireless" fiber v. WDMA, xDSL vs. cable modems, IP vs. frame relay or ATM, voice over IP vs. POTS, and so forth. Adding to the complexity is the fact that each of these services is provided by a host of competing companies each of which touts its presumed superiority. Cutting through the clutter of technologies and providing reliable service is going to be essential to winning over customers.

"The 'advantages are not going to be that we have technology that no one else has.' Instead, the market is 'going to be won by better understanding the customer and getting services in the right places."

Quentin Hardy, Bypassing the Bells – A Wireless World, Wall Street Journal, Sep. 21, 1998, Section R, quoting Lawrence K. Vanston, Technology Futures Inc.

- 7. Currently, AT&T, MCI WorldCom and Sprint are all working to offer national-level, bundled service offerings to simplify the purchase decision for the consumer.⁵ The merger of Bell Atlantic and GTE will create an additional competitor with the capability to offer nationally bundled services.
- 8. The combined GTE Bell Atlantic will be able to offer a package of facilities-based local, long distance, and advanced data services to business and residential customers across the nation. Separately, Bell Atlantic and GTE each possess part of a full-service bundled offering and customer base. Bell Atlantic brings strong wireline and wireless businesses and strong relationships with large business customers. Complementing Bell Atlantic's strengths, GTE has a rapidly growing presence in voice-grade and data long distance transmission and Internet backbone services, as well as slightly smaller wireline and wireless businesses. The combination will provide a full suite of services to customers.
- 9. Simply offering a competitive full-service bundle of telecommunications services will not guarantee success. The merged Bell Atlantic and GTE will also need to develop a brand that will stand out and be recognized and valued by potential customers. Separately, neither

⁵ For example, AT&T's stated strategy is "to rapidly increase the company's revenue, especially at its fast-growing networking services unit, AT&T Solutions. 'These strategic agreements are all about growth,' said AT&T Chairman and CEO C. Michael Armstrong. 'Growth in revenue, growth in technology, and - most important growth in what AT&T can do for customers." Company Press Release, AT&T To Acquire IBM's Global Network Business For \$5 Billion, Dec. 8, 1998. The IBM acquisition complements AT&T's portfolio of wireless services, cable-TV partnerships, international partnerships, and voice and data long-distance services. "The AT&T-BT joint venture, announced July 26, is a key element of AT&T's overall growth strategy and represents a critical global complement to agreements struck with TCG and TCI, which expand the company's ability to deliver digital broadband and IP services to customers in the United States." Company Press Release, AT&T launches AT&T Concert Services for Customers in U.S., November 11, 1998; see AT&T, Time Warner May Be Near Deal, Washington Post, Dec. 9, 1998. Other IXCs, such as MCI WorldCom and Sprint, are developing comparable packages of bundled services. Other non-traditional competitors, such as cable operators like Cox and Comcast, are entering the local exchange market by bundling local telephony, high-speed Internet and digital multi-channel TV services. "Cox is aggressively launching digital television, high-speed Internet access, and telephony, evolving the company in to the most aggressive in new product introduction." Thomas Eagan, Cox Communications, Paine Webber Research Note, Nov. 30, 1998, at p.1.

brand has sufficient recognition beyond its current service territories to stand out in a marketplace populated with well-known brands such as AT&T, MCI WorldCom and Sprint. The combined firm will have all the resources to develop a new national brand to attract customers to the new product suite.

10. The merger of Bell Atlantic and GTE will stimulate additional competition in all the markets where the companies are or intend to be active: local exchange, national bundled services, long distance and Internet/data. In the local exchange, the merger will give the combined companies a compelling product offering, strategic beachheads from which to enter other local markets and the potential to create a strong brand – all of which will facilitate the companies' entry into regions outside their existing territories. The combined companies will be able to offer a broad range of products and services to large business customers nationwide. In the long distance and Internet markets, GTE will be able to use Bell Atlantic's existing marketing and sales channels to increase the utilization of GTE's national, high-speed backbone and provide the impetus for expansion of that backbone.

III. THE PROPOSED MERGER WILL ENHANCE COMPETITION IN LOCAL EXCHANGE SERVICES

A. The Combination Will Create an Effective Competitor in the Provision of Local Exchange Services Out-Of-Region

11. The combination of Bell Atlantic and GTE will significantly increase competition in local exchange services by enabling the two companies to compete more effectively out of their traditional local exchange territories. Out-of-region competition requires a different arsenal of branded offerings and organizational capabilities when compared with wireline service provided by incumbent local exchange carriers ("ILECs"). Out-of-region customers must be

won one-by-one, and substantial and risky facilities investments must be made before entry can occur.

12. ILECs need to have both a full and compelling product portfolio, a strong brand identity, and broad national geographic coverage to be able to succeed in the provision of competitive out-of-region local exchange service across numerous dispersed markets. merger allows Bell Atlantic and GTE to take an important step towards fulfilling these three requirements. The combined entity will have a robust product portfolio, improving the value proposition of its competitive local exchange service by bundling it with long-distance voice/data services (especially Internet Protocol based services), and wireless services. The combined company will have a broad geographic coverage and existing relationships with key multilocation business customers. This can provide a strong base to build a brand with nationwide recognition, the third benefit identified above. While both Bell Atlantic and GTE have strong brand names in their ILEC territories, their brand identity out-of-region is quite weak. The initial step will be through selling GTE's advanced voice and data products into the multi-location customer base already served by Bell Atlantic. Below, I discuss why Bell Atlantic needs to respond to the change in today's competitive marketplace, the increasing demand for broadbased, bundled and branded services. Not only is the merger a strategically appropriate response to these changes in the marketplaces, it also enhances out-of-region local exchange competition by making the combined company a more effective competitor.

B. Consumers Favor Bundled Product Offerings

13. The requirements for competitive success in local services are changing rapidly, at least for the ILECs. In the past, ILECs could succeed by managing operations to achieve a low-cost, high-quality service. Now, they must also compete for customers. This competition is no longer based solely on cost and quality; it is increasingly based on the ability of the LEC to simplify the purchase decision and the management function for the consumer.

- 14. New technological opportunities are propelling an explosion in consumer demand for telecommunications services. However, new options are also adding complexity and confusion. Where consumers could only choose local and long distance voice service, a typical customer may now have access to, and demand for, wireless service, high-speed data and Internet access along with the local and long distance voice. Moreover, the once rigid lines between these services are starting to blur. Dramatic demand increases coupled with competition has brought forth a wide array of both technologies and providers. What was once a very simple decision for the consumer (one provider of local service, three major providers of long distance) has mushroomed into a complex decision involving choices among technologies and providers.
- 15. Adding further difficulty to the consumer's decision is uncertainty about the quality of the service prior to purchase. Telecommunications services are referred to as "experience goods" because there is no way to know, in advance of using or experiencing the service, the quality of the service. For such goods, consumers typically rely heavily on brands and word-of-mouth for their quality perceptions.
- 16. AT&T has clearly decided that bundled national services make business sense and is actively gathering customers:

"The Securities Industry Association (SIA) and New York Clearing House Association (NYCHA) have contracted with AT&T to provide their members a full range of local communications services in locations across the United States. The contract ... expands upon an existing local services contract [with] Teleport Communications Group (TCG), which merged with AT&T in July. AT&T will provide ... a full portfolio of local voice, data and Internet services in New York, Boston and Philadelphia immediately, and in a total of 25 major cities across the U.S. by the first quarter of 1999. AT&T's unified local service offer affords SIA/NYCHA members the advantage of obtaining local service for all their locations from a single provider, instead of negotiating with myriad local phone companies around the country. Additionally, AT&T will offer a single bill

aggregating local service charges from multiple cities and for multiple services, with discounts across all the locations and services." [emphasis added]⁶

- 17. Therefore, Bell Atlantic and GTE must simplify the complexity and uncertainty of purchase for consumers in order to compete successfully for local exchange service out of their historical territories. Specifically, to be successful in their national, out-of-region strategy, Bell Atlantic and GTE must provide:
 - A bundle of services that will meet *all* the needs of the typical customer (e.g., local voice and data, long distance voice and data, and wireless);
 - A strong brand name or customer presence.
- 18. The combination of Bell Atlantic and GTE will be strongly pro-competitive and enhance consumer welfare by creating a company that can meet the new requirements for success. In meeting these requirements, the combined company will increase customer satisfaction and the level of competition in local markets.

C. The Eroding Position of the Traditional ILEC

19. The current strategic position of ILECs is precarious, as vigorous competition is coming from competitive local exchange carriers (CLECs) for local wireline service is expanding rapidly. Competitors are entering through both wireline technologies, such as AT&T's TCG unit, or MCI WorldCom's MFS-Brooks-MCIMetro unit, and super-broadband wireless technologies, such as Teligent. In addition, ILEC customers are already purchasing advanced telecommunications services (such as data transport and wireless) from other providers. These advanced services are capturing an ever-increasing portion of the customer's spending and are even starting to replace the core local wireline business. This combination of effects is eroding

^{6 &}quot;AT&T Signs 3-Year, \$180-Million Local Services Agreement with Financial Services Firms," PR Newswire, Dec. 9, 1998.

the traditional ILEC revenue and profit base. The historic value proposition of the ILEC is no longer viable.

20. This two-pronged attack on the ILEC's local wireline business has been well recognized by investment analysts, stressing the need for ILECs to broaden both their geographic and product portfolios quickly:

"Again, as we said in the past, if an RBOC acquires assets or capabilities that take them away from being a regional carrier on defense into a more offensive, fully integrated national or even global provider then we would gladly rethink our investment position on that particular RBOC.

First quarter 1998 was a very significant watershed event because it showed that we are past the point of no return in terms of the Bells' ability to defend their market share."⁷

21. The investment and research community also believes that ILECs need to actively address the data market lest they get pushed into the position of a marginal supplier of commodity services:

"With data rapidly overtaking voice calls as the primary traffic on phone networks worldwide, the big phone companies [ILECs] need to retool their systems, lest rivals lure away their high-spending business and residential customers. . .relegating the Bells to the role of a wholesaler of dumb wires."

22. This shift towards data traffic is being driven primarily by the Internet and its demand for ever-increasing bandwidth. As a response to the increasing demand for high-speed access to the Internet, new technologies are becoming available that make it dramatically cheaper to obtain that access. Previously, high-speed access required T-1 technology at approximately \$1,000 per month -- affordable only for very large businesses. Now high-speed access can be

Jack Grubman, CLECs Surpass Bells in Net Business Line Additions For First Time, Salomon Smith Barney, May 6, 1998, Part II p.1 (hereinafter "Grubman").

Stephanie N. Mehta and John J. Keller, "Sprint Plans to Integrate Voice, Data," Wall Street Journal, June 3, 1998, p. A3.

obtained at T1 equivalent speeds through xDSL and cable modems for hundreds (or even tens) of dollars per month. Consumption of high-bandwidth services is therefore set to explode.

- 23. Bell Atlantic and GTE are under attack from two directions. First, they are under head-on attack from CLECs, which quite rationally are going after the high-volume large business customer base with bundled voice and data products. CLECs have made tremendous inroads, and are attracting the majority of new business lines, indicating very substantial local competition.⁹
- 24. The second attack is coming from substitution of wireless for local wireline service. Technology Futures Inc. predicts 30%-40% wireline market share loss to wireless within 10 years, ¹⁰ a trend confirmed by the CEO of Sprint PCS Corp.:

"[M]any of our customers are beginning to use their Sprint PCS phones for more of their communication needs

In a few cases, customers are actually disconnecting their land-line service and using Sprint PCS to make and receive all their calls at home. With Sprint PCS, consumers have a wireless phone that offers all the features, benefits and voice quality of land-line phone service with the added convenience of mobility."¹¹

25. AT&T Wireless is already competing directly with GTE's ILEC operation in Plano, Texas, offering a wireless second line replacement plan that appears price competitive with GTE's wireline service. Prospective share loss to CLECs and wireless providers combines to make the outlook for the traditional wireline voice business particularly unattractive. The

⁹ Grubman, supra note 7.

¹⁰ Technology Futures Inc., Bypassing the Bells, supra note 4.

[&]quot;Sprint PCS Reaches One Million Customers," quoting Andrew Sukawaty, CEO of Sprint PCS, Sprint PCS Press Release, see (www.sprintpcsnews.com/releases/98 02 03.html), February 3, 1998.

AT&T is offering its digital wireless service in Plano (part of the Dallas-Fort Worth metropolitan area) in a package designed to attract customers interested in second lines for their businesses or homes. By offering a \$40 monthly package of unlimited local calling bundled with voicemail, caller ID, call waiting, call forwarding, three-way conferencing, and 10 cents-per-minute long-distance service, AT&T hopes to attract second-line customers to its standard wireless service.

profitable segments are rapidly being eroded while the ILECs are saddled with low-revenue, high-cost consumers as they are the carrier of last resort.

- 26. Successful entry into the new data intensive market segment is an imperative for Bell Atlantic but this move is fraught with difficulties, as existing competitors in the data intensive segment have comparable financial strength. These competitors include:
 - AT&T/TCI/TCG
 - MCI WorldCom
 - Sprint/France Telecom/Deutsche Telekom
- 27. AT&T's proposed acquisition of IBM's Global Network and proposed partnership with Time-Warner will put AT&T out ahead in the race to be the major provider of integrated local and long-distance data services.
 - "AT&T would pay three-quarters of the cost of upgrading Time Warner's cable systems to handle voice transmissions. AT&T, in turn, would get three-quarters of the revenues from selling the local phone service. A Time Warner Inc. pact would cap an unprecedented deal-making spree by AT&T Corp., including an agreement Tuesday to buy IBM's data-networking business for \$5 billion. This fall, AT&T agreed to buy cable giant Tele-Communications Inc., for \$31.7 billion, but TCI's cable TV lines are able to reach only about one-third of U.S. homes." 13
- 28. The combination of GTE and Bell Atlantic will bring GTE's strength in data initially to Bell Atlantic's customers and eventually outside of Bell Atlantic's region. The combined company will have the strength to compete successfully both in and out of its region.

D. The Strategic Requirement for Bundling

29. An ILEC (e.g., Bell Atlantic or GTE) entering an out-of-region market needs to differentiate its products from those of the ILEC and pre-existing CLECs in order to sign up

¹³ Associated Press Online - December 9, 1998.

enough customers to make entry profitable. That differentiation is most likely to come through provision of an attractive bundled offering, which would combine competitive local exchange service with voice and data long distance, high-speed data, Internet access and transport, and wireless service. This need to provide bundled services is well understood by AT&T:

"AT&T's national footprint and full range of local services make it a natural match for us,' said H. Pim Goodbody Jr., vice president of management services for SIA. 'Many of our members maintain offices in a number of cities, so being able to work with a single company for a nationwide portfolio of local services is a tremendous benefit.'"14

30. Bundling is being used quite successfully by CLECs as a point of differentiation with the local ILEC. In addition, CLECs employ bundling in other markets to differentiate their product and attract new customers. In wireless, both Sprint PCS and AT&T (Digital One-RateTM) are using bundling. The very positive response has sent a very strong message that bundling is perceived by the consumer as providing a price value as well as simplified pricing structure. On a national level, a similar trend is occurring as AT&T is successfully working with its newly acquired TCG subsidiary to provide "one stop shopping" for telecommunications services to large national businesses. The success that AT&T in particular has demonstrated with bundled products is likely to be replicated in the local market. Consumers appear to desire strongly simplified price structures and the perception of better value that comes with a bundled offering.

^{14 &}quot;AT&T Signs 3-Year, \$180-Million Local Services Agreement with Financial Services Firms," PR Newswire, Dec. 9, 1998.

E. The Need for a Brand

31. Integrated telecommunications providers will require their brand to provide consumers with assurances of product quality¹⁵ and a greater sense of comfort with their purchase decision.¹⁶ Brands are especially effective when they are recalled at a key time in the purchasing process,¹⁷ and when buyers can use them to reduce evaluation costs.¹⁸ As telecommunications carriers develop an integrated product portfolio bundling voice/data, local/long-distance, and wireline/wireless, buyers will rely on brands, making brands a key strategic asset.¹⁹ Brands are also extremely valuable in the business segment, as well as in the residential segment.²⁰

^{15 &}quot;In the absence of a direct, face-to-face supplier-customer relationship, a brand serves as a means of assuring product authenticity and consistency of quality – it is, in effect, a promise or 'pact' between manufacturer and buyer. The brand name assures us that the features, functions and characteristics of the brand will remain invariable from purchase to purchase. In this way, the brand provides its maker with the means to provide consistently the consumer with intrinsic value or the illusion of such value, or both.

increasingly in industrial and service sectors brands help us find what it is we are looking for in a sea of apparent sameness. No small contribution in, and of, itself. Brands facilitate product or service specification, and allow customers to simplify choice and, ultimately, their selection. This is particularly important where actual tangible product-differences are subtle, almost non-existent or invisible, such as in many areas of high technology, telecommunications, and in the very near future, utilities." See Perrier, *Brand Valuation*, 1997, p. 5.

¹⁶ "Brand awareness can provide a host of competitive advantages. First, awareness provides the brand with a sense of familiarity, and people like the familiar." See David Aaker, "Managing Brand Equity," 1991, p. 208.

¹⁷ "[T]he salience of a brand will determine if it is recalled at a key time in the purchasing process. For instance, the initial step in [product selection] is to decide on which brands to consider." *Id.*, p. 208.

[&]quot;Buyer evaluation costs." As buyers face increasing problems in evaluating competing products they seek ways of economizing on evaluation costs. The most common tactic is to free-ride on the presumed analyses of the well informed and buy the market leader." Richard P. Rumelt, "Theory Strategy and Entrepreneurship," The Competitive Challenge, 1987, p. 147.

[&]quot;Brand awareness is often taken for granted but, in fact, it can be a key strategic asset. In some industries where there is product parity, awareness provides a sustainable competitive difference" David Aaker, Strategic Market Management, 1995, p. 208.

Bell Atlantic finds that its brand familiarity, product associations and customer loyalty differs only slightly between the residential and business segments. Customers in either segment generally appear equally willing to try other providers (or stay with Bell Atlantic). See Data Development Corporation, "Bell Atlantic Brand Tracking Study; The Business Market; 2nd Quarter Presentation," and "Bell Atlantic Brand Tracking Study; The Residential Market; 2nd Quarter Presentation", October, 1998.

32. The issue facing all ILECs is that the AT&T, MCI WorldCom and Sprint brands have much higher unaided recall (asking consumers what names come to mind when they think about telecommunications), as shown in the table below.

Table 1: Consumers' Unaided Recall by Telecommunications Brand²¹

Brand	Unaided Recall
AT&T	90%
MCI WorldCom	69%
Sprint	69%
GTE ²²	29%
BOCs ²³	36%

33. As a result of the powerful AT&T brand, the residential population in every single region of the country is more likely to select AT&T as its choice of local and long distance carrier instead of the incumbent local exchange carrier, as shown in the table below. Consequently, AT&T has a good chance of achieving dramatic share gains in every segment of the country – based almost exclusively on its brand name – once the company begins massmarket provision of local service.

²¹ *Id*.

²² Out-of-region, 68% in-region.

²³ Out-of-region, 49% in-region.

Table 2: Preferred Provider of Residential Long Distance and Local Service²⁴⁻²⁵
AT&T vs. ILEC, By ILEC Territory

ILEC Territory	Proportion of Customers Choosing		
	AT&T	ILEC	
Ameritech	38%	35%	
Bell Atlantic North	48%	24%	
Bell Atlantic South	45%	23%	
BellSouth	38%	30%	
GTE	50%	29%	
SBC Pacific	39%	26%	
SBC (Southwest)	43%	31%	
US West	45%	23%	

34. In all cases the ILEC's brands are virtually unknown out-of-region. This lack of brand recognition out-of-region is a fundamental obstacle that any ILEC must overcome before a successful move can be made out-of-region. Neither Bell Atlantic nor GTE currently have a brand that is compelling outside of their existing service territory. Bell Atlantic's brand is well regarded but relatively unknown outside its territory, while GTE's brand is better known on a national level, but without strong associations:

"Currently, GTE suffers from a general lack of distinction. We are only associated with passive qualities such as 'established,' 'stable,' and 'friendly.' This lack of a meaningful perceptual ownership exposes GTE to risk in an emerging, dynamic marketplace."²⁶

The Yankee Group, AT&T Press Release "Yankee Group Survey finds consumers opt for AT&T as single provider," 1/20/98, (http://www.att.com/press/0198/980120.cha.html). The Yankee Group survey asked residential customers which company they would choose to be a single provider of local and long-distance telephone service.

Data Development Corporation, "Bell Atlantic Brand Tracking Study, The Residential Market, 3rd Quarter Presentation," October, 1998.

²⁶ GTE, "GTE Brand Equity Analysis," October 22, 1998.

- 35. The merger of Bell Atlantic and GTE is therefore a sound approach to position the combined company's brands for the evolution of telecommunications competition. Regional recognition as a local service provider is not sufficient—to compete successfully outside the existing territories, Bell Atlantic and GTE need to develop a nationally recognized and respected brand.
- 36. While a cursory analysis suggests that either Bell Atlantic or GTE would have the financial resources to build a national telecommunications brand, neither company starts with a brand that is likely to be successful on a national scale, and neither company alone has any strong product claims on which to base a brand. Building a national brand is already very expensive: AT&T spent over \$1 billion on advertising alone in 1996 (not counting the cost of creative development), and major telecommunications companies increased their advertising spend by over 20% between 1996 and 1997.²⁷
- 37. The combination of Bell Atlantic's products with GTE's will provide, for the first time, a competitive nationally bundled offering that will be differentiated in the marketplace. Using this offering, the combined entity can develop a strong brand and national presence that will allow it to enter other local markets successfully.

F. Summary of Pro-competitive Local Exchange Benefits

38. In summary, the merger of Bell Atlantic and GTE will, for the first time, create an ILEC that will have the assets needed for success in the rapidly evolving market for local telecommunications. The companies have an excellent chance of becoming an effective out-of-region local competitor. The merger of Bell Atlantic and GTE is not the merger of two essentially similar ILECs. Rather, it is a merger of companies possessing complementary

Advertising Age estimates that the average yearly advertising spend of a large telecommunications company increased 22% from 1996 to 1997, from \$364 million to \$347 million. Advertising Age, (www.adage.com/dataplace/archives/dp268.html) and (www.adage.com/dataplace/archives/dp267.html).

capabilities and products. These complementary products can be bundled and used by Bell Atlantic and GTE to provide a differentiated local service offering likely to be compelling to customers.

- 39. The combination will create numerous strategic beachheads from which to establish new service areas outside of their existing territories. These beachheads are a combination of the existing GTE territories on the outskirts of major metropolitan areas and Bell Atlantic's large business customers.
- 40. Bell Atlantic brings an established customer base that includes many large companies. These large customers can provide the strategic beachheads for out-of-region entry. The combination of Bell Atlantic's customers with GTE's existing territories will provide the combined entity with multiple points of entry into new regions (e.g., Los Angeles, San Francisco, San Diego, Dallas-Fort Worth, Houston, Chicago, Cleveland, Indianapolis, Detroit, Miami, Orlando, Jacksonville, Seattle, and Portland, OR).
- 41. I find that the combination of Bell Atlantic and GTE significantly enhances the out-of-region entry prospects in twenty-one major markets spread throughout the territories of SBC, Ameritech, BellSouth and US West.²⁸ Specifically, the merger increases the expected profitability of out-of-region entry by increasing the base of "likely prospects" for the competitive local exchange operation, by increasing the prospective "take rate" of each customer, and by expanding the demand for each service when taken.
- 42. First, the combined entity expects that a certain proportion of the companies' preexisting relationships with large business customers in the target out-of-region area can be converted into actual demand for telecommunications services. A simple pooling alone of the

Bell Atlantic and GTE plan to enter 21 out-of-region metropolitan areas within 18 months of the merger's completion. See Presentation by Charles R. Lee, Chairman and CEO, GTE Corporation, FCC Meeting on Mergers, October 22, 1998.

pre-existing relationships would already increase the expected out-of-region customer base. Second, by enhancing the product portfolio and brand positioning, each new customer is more likely to subscribe to each of the services in the enlarged portfolio, thereby increasing each service's "take" rate. Third, customers are likely to consume more units of the services "taken" from the combined company, as the local services will be integrated with voice and data long-distance services provided over owned facilities (instead of resold facilities, as per Bell Atlantic's current out-of-region plans), and therefore of effectively higher quality. Fourth, the increased "take rate" and consumption reduces the minimum number of customer required for successful entry.

43. Bell Atlantic and GTE's plans to enter out-of-region in 21 metropolitan areas reflects these strategic merger synergies. The companies' strategic analysis finds that, without the merger, competitive entry is unprofitable in the vast majority of these target areas. Neither company is expected to recoup its capital and marketing investments on its own within a reasonable period of time. GTE has a relatively small base of "likely prospects," and therefore does not expect to sign up enough customers to make entry profitable. The expected profitability of Bell Atlantic's standalone entry, on the other hand, is hampered by its incomplete product portfolio. This deficiency translates to a low take rate and low demand for services that (without GTE) Bell Atlantic would only provide over resold facilities, such as out-of-region dedicated high-speed transport. Entry by the merged entity, however, is expected to be profitable in all of these target areas, as the merger favorably impacts the base of high-probability marketing prospects, and the enhanced product portfolio increases both the expected take rate and expected per customer usage of each service. The expected higher take and per customer usage rates actually reduce the number of customers required to break even on the entry. The larger base of prospects increases even further the probability that this lower break even point will be reached, to the point that entry is expected to be profitable by the combined company in all of the 21

target markets. The merger will therefore be procompetitive, sparking significant additional local competition and competitive responses, all to the benefit of consumers.

IV. THE PROPOSED MERGER WILL ENHANCE COMPETITION IN LONG DISTANCE VOICE AND DATA SERVICES

- 44. The transaction will also be strongly pro-competitive in the provision of long distance voice and data services. I will focus my analysis on long distance data services, as the benefits on the voice side of combining a newly created facilities-based network (GTE) with a reseller (as Bell Atlantic will be out-of-region when it obtains Sec. 271 authority) are generally well understood. On the other hand, the provision of data services is much more dominated by AT&T, MCI WorldCom, and Sprint than are voice services, as evidenced by the fact that AT&T and MCI WorldCom have repeatedly boosted data service prices over the last twelve months.²⁹ Nor have the newer networks delivered on their promise to increase competition for example, industry observers dismiss the much touted upstart carrier Qwest Communications as "the epitome of hype."³⁰
- 45. The transaction will increase competition in long distance data provision by speeding up deployment of a new national long distance data network that can effectively compete with the Big Three facilities-based providers. The MCI WorldCom transaction has

For evidence of repeated price hikes by AT&T and MCI Worldcom for data services: David Rohde, "AT&T hikes prices of popular frame relay speeds," Network World, November 9, 1998, "Right out of the gate, an MCI price hike," Network World, November 17, 1997, "AT&T hikes prices across the board," Network World, November 5, 1997, "AT&T raises private-line rates, lowers frame-relay charges," Network World, November 4, 1996. The Big Three incumbents in a concentrated data market have taken advantage of soaring demand to raise prices: "If you think the Internet is backed up, wait until you go out and try to buy a T-3 circuit. You're likely to find that high-speed pipes are suddenly hard to come by, installation intervals are lengthening, and prices continue to increase." David Rohde, "The Great T-3 Shortage," Network World, March 31, 1997.

David Rohde, "Qwest Throws Down Pricing Gauntlet," Network World, Dec. 14, 1998. The author also notes that "[Qwest currently has] little more to offer than voice-over-IP in a handful of cities... Qwest's IP network is still a work in progress, and that it does not plan dial-up access or an IP virtual private network until sometime next year," and that it "it is currently [delivering] enterprise services using a second non-pure IP network" obtained from its takeover of LCI.

removed an important fourth competitor, MCI, and opened up a substantial gap between the three leading firms and the competitive fringe. As has been shown in the MCI WorldCom merger proceeding, there is a dearth of networks that are truly national in reach.³¹ While some newer carriers such as Qwest are putting fiber in the ground, their network construction is not proceeding as quickly as originally planned.³² Most importantly, these new networks do not have a geographical reach (in terms of points-of-presence) and service breadth (in terms of product platforms) comparable to that of the Big Three.³³ For example, only the Big Three currently possess a service platform for delivering voice-based Virtual Private Network capability or a nationwide Asynchronous Transport Mode ("ATM") or Frame Relay ("FR") data transport offering.

46. Construction of a national long distance network providing ubiquitous service to all markets, not just to the top urban centers, requires large volumes of traffic to achieve necessary economies. Although GTE is making substantial gains in long distance (voice and data), selling long distance to its own dispersed customer base will not generate sufficient traffic to deploy a full-fledged network. While GTE's "Global Network Infrastructure," or GNI, fiber will soon be in place, building a full network is far from complete. Carriers need to deploy switches and cross-connect systems, establish points-of-presence ("POPs"), develop service platforms, and implement billing and operations support systems. It is this set of post-fiber

³¹ Long Distance Affidavits of Robert G. Harris on behalf of GTE Corp., in WorldCom Inc. and MCI Communications Corp. Proposed Transfer of Control CC Docket No. 97-211, filed March 13, 1998 (First Long Distance Affidavit) at ¶¶52-60, and May 7, 1998 (Second Long Distance Affidavit), at ¶¶52-72.

^{32 &}quot;'Qwest has grudgingly acknowledged the impact to their customers of its build-out delays,' said Joseph P. Nacchio, president and CEO of Qwest. 'It is unfortunate that Frontier believes Qwest is impacting their earnings in any way. We value all our customers, like Frontier, and we will continue to work hard to provide them with the most advanced, secure fiber optic network in the world.' "Analyst Briefing, Qwest Communications, July 23, 1998. In that briefing Qwest acknowledged that Frontier's purchase of fiber in the Southeast U.S. from Williams was understandable, as Qwest was not reportedly "not interested" in pursuing that business opportunity with Frontier. The delays in the build-out in Qwest's network have been amply documented before this Commission in the Harris Second Long-Distance Affidavit, at ¶66-69.

³³ Harris First Long Distance Affidavit at ¶127-135.

investments that determines a network's functionality. Moreover, a company's expected traffic volumes critically determine whether these investments are made. Combining Bell Atlantic's existing and projected voice and data traffic onto the customer base will provide the scale necessary to meet its break-even point for specific deployment in many more markets.

- 47. I have calculated that, as a result of the combination of the two companies' projected data traffic streams, the new company would likely be able to expand by over 15% the number of cities where it could profitably offer data services in 2001. I have reviewed GTE's data traffic revenue projections for 94 major metropolitan areas, which indicate that GTE would find it profitable to provide data services as a stand-alone entity in only 70 of these areas by 2001. The decision to establish data service in a particular city is straightforward - can the company attract enough traffic, both originating and terminating in that city, to recover the startup investment required for the initial terminal equipment facilities. I have also reviewed Bell Atlantic's traffic projections for data services, comprising FR and ATM services as well as private line ("PL") services. These internal projections were predicated on construction of owned facilities in-region (subject to Sec. 271 authorization) and use of resold facilities out-ofregion. I then projected the combined company's data revenues in 2001 by combining the estimated revenues from Bell Atlantic's projected data traffic to the GNI's existing data traffic revenue projections. Cities where the combined companies' revenue stream would likely exceed the break-even threshold were then identified as possible new markets where expansion would be justified.
- 48. As a result of the additional traffic that would be contributed by Bell Atlantic, I estimate that the combined company would have sufficient traffic by 2001 to support the provision of data services in at least eleven additional metropolitan areas: West Palm Beach (FL), Tucson (AZ), Tallahassee (FL), Omaha (NE), Macon (GA), Greensboro (NC), Eugene (OR), Des Moines (IA), Anaheim (CA), Springfield (MA), and Portsmouth (VA). In other words, when combined, the companies' projected revenue stream in these cities exceeds the

break-even threshold. It is important to stress that these would be net additions to the cities where data services would have been provided over owned facilities by GTE or Bell Atlantic independently. In the case of the additional cities in Bell Atlantic's ILEC region (Springfield, MA and Portsmouth, VA), Bell Atlantic does not expect its standalone traffic to justify construction of facilities. Once this traffic is added to GTE's own projected sales, and the existence of the GNI taken into account, however, construction of the additional facilities to provide data services in these cities would become economical. Additionally, the bundling opportunities offered by long distance data services in these cities would also reinforce the combined entity's competitiveness in local service provision, and advance GNI's network deployment schedule by one to two years.

49. Placing Bell Atlantic's traffic on the GNI would significantly enhance the company's competitive position in data services. In addition to traffic projections, I have also reviewed GTE's projections for the installed data capacity on the GNI – that is, the quantity of DS-3 equivalent data connections that would be provided by the data switches and cross-connect capacity that GTE plans to install in the future. These projections also included the average annual cost per unit of installed data capacity, which is expected to decline sharply as capacity increases. Based on the review of Bell Atlantic's projected data traffic as a standalone entity described above, I find that adding this traffic to the GNI would involve an expansion in the GNI's installed data capacity of approximately 25% by 2001. Using the declining average capacity cost from GTE's projections, I further estimate that adding Bell Atlantic's PL-FR-ATM traffic to the GNI would reduce the GNI's unit capacity cost by at least 10%. In other words, the incremental traffic requires a relatively inexpensive incremental capacity addition. Not only would the combined company's average production cost be lower, but a significant financial benefit would be realized by replacing Bell Atlantic's small scale network in region and resold service (purchased at wholesale rates) out-of-region with the more scale-efficient facilities of the GNI. In addition, the merged company could expect additional significant savings by similarly combining Bell Atlantic's and GTE's voice and Internet Protocol (IP) traffic on the GNI.

- 50. Thus, the merger of Bell Atlantic and GTE will add a fourth competitor able to challenge the three leading firms in the provision of integrated voice/data services on both a national and local level. Neither alone has all the assets required to attack credibly this market in the near term, but the combined company will be able to reduce significantly the time needed to meet competition in the marketplace.
- 51. The merged company will be able to offer national bundled services more effectively than either would be able to alone. While both companies have the potential to offer this service sometime in the future, GTE brings immediate customer credibility in IP and long distance, while Bell Atlantic brings credibility and extensive relationships with large customers. GTE has had only partial success pursuing this strategy due to the lack of pre-existing customer relations, which are critical in a service contract-driven business.³⁴ Absent Bell Atlantic's scale and customer base, GTE is unlikely to catch the three leading data/voice national carriers, and will remain at best a distant fourth. GTE's dispersed customer base limits its ability to support new Internet services that require substantial up-front investments, and makes for higher customer acquisition costs than those of its competitors.

V. THE PROPOSED MERGER WILL ENHANCE COMPETITION IN INTERNET SERVICES

52. The increase in the size of GTE's Internet operation will confer a significant procompetitive benefit by augmenting competition amongst backbone providers. This will ensure that no single provider dominates the Internet. Despite the internetMCI divestiture, the competition between backbone providers remains an issue. MCI WorldCom and Sprint operate

the leading Internet backbones. In addition, MCI WorldCom owns the leading business ISP, UUNet, and Sprint has a substantial stake in Earthlink, one of the largest national ISPs, and is reportedly moving to acquire full control.³⁵ AT&T's completed TCG acquisition and its proposed transactions with TCI, IBM, and Time-Warner may lead to the creation of a dominant, unregulated provider of high-speed two-way broadband consumer access.³⁶

53. In the MCI WorldCom proceeding, it became apparent that asymmetry amongst backbone providers on the Internet (where interconnection is appropriately unregulated) provides opportunities for a dominant firm—or an oligopoly of large firms—to degrade the quality of peering connections with competing backbone providers. Since the value of each backbone's network increases as the number of customers on that network increases, unilateral growth of any one of the three largest backbones will push more and more customers to that network, creating the potential for a "tipping" effect.³⁷ Major Internet backbones currently exchange traffic through peering arrangements, exchanging traffic without charge.³⁸ These arrangements only work where the backbones handle roughly comparable traffic volumes – if one of the backbones were to grow significantly larger than the others, its competitors would become dependent on the larger backbone, and it could refuse to continue the existing peering arrangements.³⁹

³⁴ See Declaration of Jeffery C. Kissell and Scott M. Zimmerman Declaration, at ¶15.

³⁵ Crandall-Sidak Declaration, ¶ 48.

³⁶ *Id*.

³⁷ Internet Affidavits of Robert G. Harris on behalf of GTE Corp., in WorldCom Inc. and MCI Communications Corp. Proposed Transfer of Control CC Docket No. 97-211, filed March 13, 1998 (First Internet Affidavit) at ¶69-75, and June 8, 1998 (Second Internet Affidavit), at ¶55.

³⁸ Id.

³⁹ *Id*.

54. Against the backdrop of increasing asymmetry between the Big Three and the rest of the pack, the Bell Atlantic—GTE merger will have a strong pro-competitive benefit by sustaining GTE's traffic volumes and accelerating its growth rate. This growth would undermine the ability of a dominant firm (or a group of firms coordinating their behavior) to drive competitors from the market of top-tier backbone providers. Because backbone service is a necessary input to almost all Internet services—including business and ISP customers, web hosting, and dial-up access—such anti-competitive behavior, were it to occur, would have severe consequences for all types of Internet consumers.

VI. CONCLUSION

55. The combination of Bell Atlantic and GTE will be highly pro-competitive. In local service provision, the combined companies' competitiveness will be enhanced by the ability to offer a highly competitive bundle of local, data, wireless and long-distance services, and to sell these bundled products through the Bell Atlantic base of large business customers. This bundled offering can be the product platform from which the combined entity can develop a national brand and initiate out-of-region ILEC vs. ILEC competition. The incremental traffic onto GTE's GNI will result in substantial cash savings and an enhanced competitive position in long-distance voice and data services. The additional traffic will improve the merged company's competitive position through lower unit costs, replacement of resold wholesale service with self-supplied service over owned facilities, and increase in the number of metropolitan areas where the minimum traffic requirements for offering terminating data services are met. Finally, the additional traffic onto GTE's ISP and backbone networks will safeguard the competitiveness of

the Internet and enhance competition between unregulated backbone networks. The combination of GTE and Bell Atlantic will create a company with the skills and resources necessary to compete effectively with the established companies in each segment.

56. I therefore conclude that the merger of Bell Atlantic and GTE will only enhance competition and consumer welfare in telecommunications – in both the immediate term and in the future – and that the application for transfer of control should be approved.

I hereby swear, under penalty of perjury, that the foregoing is true and correct.

und J. Tele-

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Executed on this 18th day of December, 1998.



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Articles

1) "The Determination of Residential Section Prices in Some South Island Centres" (with R. E. Falvey), New Zealand Economic Papers, 1972.



- 2) "Time-Cost Tradeoffs: Elasticity Estimates and Determinants for International Technology Transfer Projects," Management Science, 23:8 (April 1977), 830-837.
- "Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-How," <u>The Economic Journal</u>, 87 (June 1977), 242-261. Reprinted in E. Mansfield and E. Mansfield (eds.), <u>The Economics of Technical Change</u> (London: Edward Elgar, 1993). Reprinted in M. Casson (ed.), <u>Multinational Corporations</u>, The International Library of Critical Writings in Economics 1 (England: Edward Elgar Publishing, 1990), 185-204.
- "Organizational Structure and Economic Performance: A Test of the Multidivisional Hypothesis" (with Henry Armour), <u>The Bell Journal of Economics</u>, 9:1 (Spring 1978), 106-122. Reprinted in J. Barney and W. Ouchi (eds.), <u>Organizational Economics: Toward a New Paradigm for Studying and Understanding Organizations</u> (San Francisco: Jossey-Bass, 1986).
- 5) "Overseas Research and Development by U.S.-Based Firms" (with E. Mansfield and A. Romeo), Economica, 46 (May 1979), 187-196. Reprinted in Wortzel and Wortzel (eds.), Strategic Management of Multinational Corporations (New York: John Wiley, 1985).
- 6) "The Diffusion of an Administrative Innovation," Management Science, 26:5 (May 1980), 464-470.
- 7) "Vertical Integration and Technological Innovation" (with Henry Armour), <u>The Review of</u> Economics and Statistics, 62:3 (August 1980), 470-474.
- "Economies of Scope and the Scope of the Enterprise," <u>Journal of Economic Behavior and Organization</u>, 1:3 (1980), 223-247. Republished as "La Diversificazione Strategica: Condizioni di Efficienza," a cura de Raoul C. D. Nacamulli e Andrea Rugiadini, <u>Organizzazione e Mercato</u> (Bologna, Italy: Mulino, 1985), 447-476. Exerpted in <u>Resources</u>, Firms and Strategies, Nicolai Foss (ed.), Oxford University Press, 1997.
- 9) "The Multinational Enterprise: Market Failure and Market Power Considerations," Sloan Management Review, 22:3 (Spring 1981), 3-17. Republished as "Riflessioni Sull'impresa Multinazionale: Potere de Mercato o Crisi del Mercato," a cura de Raoul C. D. Nacamulli e Andrea Rugiandini, Organizzazione e Mercato (Bologna, Italy: Mulino, 1985), 477-498.
- 10) "The Market for Know-How and the Efficient International Transfer of Technology," The Annals of the Academy of Political and Social Science, (November 1981), 81-96.
- 11) "Internal Organization and Economic Performance: An Empirical Analysis of the Profitability of Principal Firms," Journal of Industrial Economics, 30:2 (December 1981), 173-199.
- 12) "A Tariff on Imported Oil" (with James Griffin), <u>Journal of Contemporary Studies</u> (Winter 1982), 89-92.
- 13) "An Exchange on Oil Tariffs" (with Milton Friedman and James Griffin), <u>Journal of</u> Contemporary Studies (Summer 1982), 55-60.
- 14) "Supplier Switching Costs and Vertical Integration in the Automobile Industry" (with Kirk Monteverde), <u>The Bell Journal of Economics</u>, 13:1 (Spring 1982), 206-213. Reprinted in Steven G. Medema (ed.), The Legacy of Ronald Coase in Economic Analysis (London:



Edward Elgar Publishing, 1995); in Oliver E. Williamson and S. E. Masten (eds.), <u>Transaction Cost Economics</u>, Volume II: Policy and Applications (Aldershot, England: Edward Elgar Publishing, 1995), 66-73. Also reprinted in S.E. Masten (ed.), <u>Case Studies in Contracting and Organization</u> (New York: Oxford University Press, 1996). Reprinted in <u>Transaction Cost Economics</u>, Oliver E. Williamson and S. E. Masten (eds.), for <u>The International Library of Critical Writings in Economics</u>, Mark Blaug (ed.) (Cheltenham, United Kingdom: Edward Elgar Publishing Ltd., 1995).

- 15) "Appropriable Rents and Quasi-Vertical Integration" (with Kirk Monteverde), The Journal of Law and Economics, Vol. XXV (October 1982), 321-328.
- 16) "A Behavioral Analysis of OPEC: An Economic and Political Synthesis," <u>Journal of Business</u> Administration, 13 (1982), 127-159.
- "Towards an Economic Theory of the Multiproduct Firm," <u>Journal of Economic Behavior and Organization</u>, 3 (1982), 39-63. Reprinted in Louis Putterman and R.S. Kroszner (eds.), <u>The Economic Nature of the Firm: A Reader</u> (Cambridge: Cambridge University Press, 1986).
 Reprinted in Oliver E. Williamson and Scott E. Masten (eds.), <u>Transaction Cost Economics</u>, <u>Vol. 1: Theory and Concepts</u> (London: Edward Elgar Publishing, 1995), 153-177.
- 18) "Assessing OPEC's Pricing Policies," California Management Review, 26:1 (Fall 1983), 69-87.
- 19) "The Limits of Neoclassical Theory in Management Education" (with Sidney G. Winter), American Economic Review, 74:2 (May 1984), 116-121.
- 20) "Economic Analysis and Strategic Management," <u>California Management Review</u>, 26:3 (Spring 1984), 87-110; reprinted in J. Pennings (ed.), <u>Organizational Strategy and Change</u> (San Francisco: Jossey-Bass, 1985); and in D. Vogel and G. Carroll (eds.), <u>Strategy and Organization</u>: A West Coast Perspective (New York: Pitman, 1984).
- 21) "Multinational Enterprise, Internal Governance, and Industrial Organization," American Economic Review, 75:2 (May 1985), 233-238.
- 22) "Transactions Cost Economics and the Multinational Enterprise: An Assessment," <u>Journal of</u> Economic Behavior and Organization, 7 (1986), 21-45.
- 23) "Assessing the Competition Faced by Oil Pipelines," <u>Contemporary Policy Issues</u>, IV, 4 (October 1986), 65-78.
- "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy," Research Policy, 15:6 (1986), 285-305. (Selected by the editors as one of the best papers published by Research Policy over the period 1971-1991.) Republished in Ricerche Economiche, 4 (October/December 1986), 607-643, and as "Innovazione Technologica e Successo Imprenditoriale," L'Industria, 7:4 (October/December 1986), 605-643; translated into Russian and published at St. Petersburg University. Abstracted in The Journal of Product Innovation Management, 5:1 (March 1988). Reprinted in C. Freeman (ed.), The Economics of Innovation (U.K.: Edward Elgar Publishing), 1990 hardback; 1998 paperback.
- 25) "Vertical Integration and Risk Reduction" (with C. Helfat), <u>Journal of Law, Economics, and</u> Organization, 3:1 (Spring 1987), 47-67.



- 26) "Acceptable Cooperation among Competitors in the Face of Growing International Competition" (with Thomas M. Jorde), <u>Antitrust Law Journal</u>, 58:2, (37th Annual Meeting, Honolulu, Hawaii, August 1989), 529-556.
- 27) "Capturing Value from Technological Innovation: Integration, Strategic Partnering, and Licensing Decisions," <u>Interfaces</u>, 18:3 (May/June 1988), 46-61. Reprinted in Bruce R. Guile and H. Brooks (eds.), <u>Technology and Global Industry</u> (Washington, DC: National Academy Press, 1987), 65-95; and in F. Arcangeli, P.A. David, and G. Dosi (eds.), <u>Modern Patterns in Introducing and Adopting Innovations</u> (Oxford: Oxford University Press, 1989); and in E. Rhodes and D. Wield (eds.), <u>Implementing New Technologies</u>: <u>Innovation and the Management of Technology</u> (Oxford and Cambridge, MA: Basil Blackwell, 1994), 129-140; and in Michael L. Tushman and Philip Anderson, <u>Managing Strategic Innovation and Change</u>: A Collection of Readings (New York and Oxford: Oxford University Press, 1997), 287-306.
- 28) "Competing Through Innovation: Implications for Market Definition" (with Thomas M. Jorde), Chicago-Kent Law Review, 64:3 (1989), 741-744. (Symposium on Antitrust Law and the Internationalization of Markets).
- 29) "Competition and Cooperation: Striking the Right Balance" (with Thomas M. Jorde), California Management Review, 31:3 (Spring 1989), 25-37. Reprinted as "Concorrenza e Cooperazione Nelle Strategie di Sviluppo Technologico," <u>Economia e Politica Industriale</u>, n. 64 (1989), 17-45.
- "Competition and Cooperation in Technology Strategy," <u>Business Review</u>, 36:4 (March 1989) (Tokyo: The Institute of Business Research, Hitotsubashi University).
- 31) "Innovation, Cooperation, and Antitrust: Balancing Competition and Cooperation" (with Thomas M. Jorde), High Technology Law Journal, 4:1 (Spring 1989), 1-113.
- 32) "Inter-organizational Requirements of the Innovation Process," Managerial and Decision Economics, Special Issue, 1989, pp. 35-42.
- 33) "Struktur und Organisation der Deutschen und der US-Gaswirtschaft im Vergleich: Folgerungen für den Status der Gasversorgungsunternehmen" (with Manfred J. Dirrheimer), Zeitschrift für Energiewirtschaft, 1 (1989), 36-50.
- 34) "Structure and Organization of the Natural Gas Industry: Differences between the United States and the Federal Republic of Germany and Implications for the Carrier Status of Pipelines," The Energy Journal, 11:3 (1990), 1-35.
- 35) "Strategies for Capturing Value from Technological Innovation," <u>Thai-American Business</u>, May-June 1990, 30-38. Reprinted as "Capturing Value from Innovation," <u>Les Nouvelles</u>, 26:1 (March 1991), 21-26.
- 36) "Les Frontières des Entreprises: Vers une Théorie de la Cohérence de la Grande Entreprise" (with G. Dosi and S. Winter), Revue d'Économie Industrielle, 51, 1^{er} trimestre 1990, 238-254.
- 37) "Innovation and Cooperation: Implications for Competition and Antitrust" (with Thomas M. Jorde), Journal of Economic Perspectives, 4:3 (Summer 1990), 75-96.



- 38) "Innovation, Dynamic Competition, and Antitrust Policy" (with Thomas M. Jorde), Regulation, 13:3 (Fall 1990), 35-44.
- 39) "Product Emulation Strategies in the Presence of Reputation Effects and Network Externalities: Some Evidence from the Minicomputer Industry" (with Raymond S. Hartman), Economics of Innovation and New Technology, 1 (1990), 157-182.
- 40) "Antitrust Policy and Innovation: Taking Account of Performance Competition and Competitor Cooperation" (with Thomas M. Jorde), <u>Journal of Institutional and Theoretical</u> Economics, 147 (1991), 118-144.
- 41) "Capturing and Retaining Value from Innovation," Technology Strategies (August 1991), 8-10.
- 42) "Innovation, Trade, and Economic Welfare: Contrasts between Petrochemicals and Semiconductors," North American Review of Economics & Finance, 2(2) (1991), 143-155.
- "Strategic Management and Economics" (with Richard P. Rumelt and Dan Schendel), Strategic Management Journal, 12 (1991), 5-29.
- "Foreign Investment and Technological Development in Silicon Valley," <u>California</u> <u>Management Review</u>, 34:2 (Winter 1992), 88-106. Translated into Russian and published at St. Petersburg University.
- "Competition, Cooperation, and Innovation: Organizational Arrangements for Regimes of Rapid Technological Progress," <u>Journal of Economic Behaviour and Organization</u>, 18, (1992),
 1-25. Reprinted in <u>Industrial Policy and Competitive Advantage</u>, David B. Audretsch (ed.), for <u>The International Library of Critical Writings in Economics</u>, Mark Blaug (ed.) (Cheltenham, United Kingdom: Edward Elgar Publishing Limited, forthcoming).
- 46) "The Dynamics of Industrial Capitalism: Perspectives on Alfred Chandler's <u>Scale and Scope</u> (1990)," <u>Journal of Economic Literature</u>, 31 (March 1993), 199-225. Reprinted in Patrick O'Brien (ed.), Critical Perspectives on the World Economy (London: Routledge, 1997/1998).
- 47) "Rule of Reason Analysis of Horizontal Arrangements: Agreements Designed to Advance Innovation and Commercialize Technology" (with Thomas M. Jorde), Antitrust Law Journal, 61:2 (1993), 576-619.
- 48) "Trans-Pacific Competitive Challenges for Innovation and Renewal," <u>Technology Rivalries</u> and Synergies between North America and Japan, Symposium III, Licensing Executives Society (March 28-30, 1993), 7-22.
- 49) "Assessing Market Power in Regimes of Rapid Technological Change" (with Raymond S. Hartman, Will Mitchell and Thomas M. Jorde), <u>Industrial and Corporate Change</u>, 2:3 (1993), 317-350.
- 50) "Understanding Corporate Coherence: Theory and Evidence" (with R. Rumelt, G. Dosi and S. Winter), <u>Journal of Economic Behavior and Organization</u>, 23:1 (1994), 1-30. Reprinted in <u>Theory of the Firm</u>, Mark Casson (ed.), (London: Edward Elgar, 1997).



- "Information Sharing, Innovation, and Antitrust," Antitrust Law Journal, 62:2 (Winter 1994), 465-481. Reprinted in Horst Albach, Jim Y. Jin, and Christoph Schenk (eds.), Collusion through Information Sharing? New Trends in Competition Policy (Berlin: Edition Sigma, 1996), 51-68.
- 52) "Systems Competition and Aftermarkets: An Economic Analysis of Kodak" (with Carl Shapiro), The Antitrust Bulletin, 39:1 (Spring 1994), 135-162.
- 53) "The Dynamic Capabilities of Firms: An Introduction" (with Gary Pisano), <u>Industrial and</u> Corporate Change, 3:3 (1994), 537-556.
- 54) "Telecommunications in Transition: Unbundling, Reintegration, and Competition," Michigan Telecommunications and Technology Law Review, 4 (1995).
- 55) "Competition and 'Local' Communications, Innovation, Entry and Integration" (with Gregory L. Rosston), Industrial and Corporate Change, 4:4 (1995), 787-814. Reprinted in E.M. Noam and A.J. Wolfson (eds.), Globalism and Localism in Telecommunications (North Holland: Elsevier Science B. V., 1997), 1-25.
- 56) "Estimating the Benefits from Collaboration: The Case of SEMATECH" (with Albert N. Link and William F. Finan), Review of Industrial Organization, (1996), 737-751.
- 57) "When is Virtual Virtuous? Organizing for Innovation" (with Henry W. Chesbrough), Harvard Business Review (January-February 1996), 65-73. Also in John Seely Brown (ed.), Seeing Things Differently: Insights on Innovation (Boston, MA: Harvard Business School Publishing, 1997), 105-119.
- 58) "Licensing and Cross-Licensing in Electronics: Managing Intellectual Capital for Design Freedom and Wealth Creation," (with Peter C. Grindley), California Management Review, 39:2, (Fall 1996), 1-34.
- 59) "Firm Organization, Industrial Structure, and Technological Innovation," <u>Journal of Economic Behavior & Organization</u>, 31 (1996), 193-224.
- 60) "Economic Reform in New Zealand 1984-95: The Pursuit of Efficiency" (with Lewis Evans, Arthur Grimes and Bryce Wilkinson) Journal of Economic Literature, Vol. XXXIV (December 1996), 1856-1902.
- 61) "Mitigating Procurement Hazards in the Context of Innovation" (with John M. de Figueiredo), Industrial and Corporate Change, 5:2 (1996), 537-559. Reprinted in Glenn Carroll, Pablo Spiller and David Teece (eds.), Firms, Markets, and Hierarchy: Perspectives on the Transactions Cost Economics (Oxford: Oxford University Press, forthcoming, 1998).
- "Dynamic Capabilities and Strategic Management" (with Gary Pisano and Amy Shuen), Strategic Management Journal, 18:7 (1997), 509-533. Excerpted in Nicolai Foss (ed.), Resources, Firms and Strategies, Oxford University Press, 1997.
- The Merger Guidelines in the United States, Australia and New Zealand: An Economic Perspective," (with Mary Coleman and Christopher Pleatsikas), <u>Trade Practices Law Journal</u>, forthcoming, 1998.



- 64) "Licensing and the Market for Know-How," R&D Enterprise Asia Pacific, vol. 1, no. 2-3 (1998), 3-5.
- "Capturing Value from Knowledge Assets: The New Economy, Markets for Know-How, and Intangible Assets," California Management Review, 40:3, Spring 1998.
- 66) "Research Directions for Knowledge Management," California Management Review, 40:3 (Spring 1998), 289-292.

Monographs

- 1) Vertical Integration and Vertical Divestiture in the U.S. Oil Industry (Stanford: Stanford University Institute for Energy Studies, 1976).
- 2) The Multinational Corporation and the Resource Cost of International Technology Transfer (Cambridge, MA: Ballinger, 1976).
- 3) R&D in Energy: Implications of Petroleum Industry Reorganization (ed.) (Stanford: Stanford University Institute for Energy Studies, 1977).
- 4) Technology Transfer, Productivity and Economic Policy (with E. Mansfield, et al.) (New York: W. W. Norton, 1982).
- 5) OPEC Behavior and World Oil Prices (with James Griffin) (London: Allen & Unwin, 1982).
- 6) The Competitive Challenge: Strategies for Industrial Innovation and Renewal (ed.) (New York: Harper & Row, Ballinger Division, 1987). Translations into Japanese and Italian.
- 7) Antitrust, Innovation, and Competitiveness, Thomas M. Jorde and David J. Teece (eds.) (New York: Oxford University Press, 1992).
- 8) Fundamental Issues in Strategy: A Research Agenda, Richard P. Rumelt, Dan E. Schendel and David J. Teece (eds.) (Boston: Harvard Business School Press, 1994). Translation into Portuguese (Lisbon: Bertrand Editora, Ltda.), forthcoming, 1996. Translation into Indonesian (Jakarta: Binarupa Aksara, forthcoming, 1997).
- 9) Economic Performance and the Theory of the Firm: The Selected Papers of David Teece, Volume 1 (London: Edward Elgar Publishing, forthcoming, 1998).
- 10) Strategy, Technology and Public Policy: The Selected Papers of David Teece, Volume 2 (London: Edward Elgar Publishing, forthcoming, 1998).
- 11) <u>Technology, Organization, and Competitiveness: Perspectives on Industrial and Corporate Change, Giovanni Dosi, David Teece and Josef Chytry (eds.) (Oxford: Oxford University Press, 1998).</u>
- 12) Privatization, Deregulation and the Transition to Markets, with Pablo Spiller and Leonard Waverman (eds.), (London: Edward Elgar Publishing, forthcoming).



13) Firms, Markets, and Hierarchy: Perspective on the Transactions Cost Economics, Glenn Carroll, Pablo Spiller, and David Teece (eds.) (Oxford: Oxford University Press, forthcoming, 1998).

Contributions

- 1) "Vertical Integration in the U.S. Oil Industry," in E. Mitchell (ed.), <u>Vertical Integration in the</u> Oil Industry (Washington, DC: American Enterprise Institute, 1978), 105-189.
- "Innovation and Divestiture in the U.S. Oil Industry" (with Henry Ogden Armour), in David J. Teece, <u>R&D in Energy</u>: <u>Implications of Petroleum Industry Reorganization</u> (Stanford: Stanford University Institute for Energy Studies, August 1977), 7-93.
- "Horizontal Integration in Energy: Organizational and Technological Considerations," in E. Mitchell (ed.), <u>Horizontal Divestiture in the Oil Industry</u> (Washington, DC: American Enterprise Institute, 1978), 57-72.
- 4) "Energy Company Financial Reporting: Conceptual Framework for an Energy Information System" (with Paul A. Griffin) in William W. Hogan (ed.), Energy Information: Description, Diagnosis, and Design, Chapter 10 (Stanford, CA: Stanford University Institute for Energy Studies, December 1978), 235-289.
- 5) "Integration and Innovation in the Energy Markets," in R. Pindyck (ed.), <u>Advances in the</u> Economics of Energy and Resources, Vol. 1 (Greenwich, CT: JAI Press, 1979), 163-212.
- 6) "The New Social Regulation: Implications and Alternatives," in M. Boskin (ed.), <u>The Economy in the 1980s: A Program for Growth and Stability</u> (San Francisco: Institute for Contemporary Studies, 1980), 119-158.
- 7) "Technology Transfer and R&D Activities of Multinational Firms: Some Theory and Evidence" in R. Hawkins (ed.), <u>Technology Transfer and Economic Development</u> Vol. 2 (Greenwich, CT: JAI Press, 1981), 39-74.
- 8) "Technological and Organisational Factors in the Theory of the Multinational Enterprise," in Mark Casson (ed.), The Growth of International Business (London: Allen & Unwin, 1983), 51-62.
- 9) "Competitiveness" (with S. Cohen, L. Tyson and J. Zysman), in Global Competition: The New Reality, Vol. III (Washington, DC: President's Commission on Industrial Competitiveness, 1985).
- 10) "La diversificazione strategica: condizioni di efficienza," in Raoul C.D. Nacamulli and Andrea Rugiadini (eds.), Organizzazione & Mercato (Bologna: Il Mulino, 1985), 447-476.
- "Firm Boundaries, Technological Innovation, and Strategic Management," in Lacy G. Thomas (ed.), Economics of Strategic Planning (Lexington, MA: Lexington Books, 1986), 187-199.
- 12) "Joint Ventures and Collaborative Arrangements in the Telecommunications Equipment Industry" (with G. Pisano and M. Russo) in David Mowery (ed.), <u>International Collaborative</u> Ventures in U.S. Manufacturing (Cambridge, MA: Ballinger, 1988), 23-70.



- 13) "Joint Ventures and Collaboration in the Biotechnology Industry" (with G. Pisano and W. Shan) in David Mowery (ed.), <u>International Collaborative Ventures in U.S. Manufacturing</u> (Cambridge, MA: Ballinger, 1988), 183-222.
- "Technological Change and the Nature of the Firm," in G. Dosi, C. Freeman, R. Nelson, G. Silverberg, and L. Soete (eds.), <u>Technical Change and Economic Theory</u> (London: Pinter, 1988), 256-281.
- 15) "The Research Agenda on Competitiveness" (with Peter Jones) in A. Furino (ed.), Cooperation and Competition in the Global Economy: Issues and Strategies (Cambridge, MA: Ballinger, 1988), 101-114.
- 16) "What We Know and What We Don't Know About Competitiveness" (with Peter Jones) in A. Furino (ed.), Cooperation and Competition in the Global Economy (Cambridge, MA: Ballinger, 1988), appendix, 265-330.
- 17) "Reconceptualizing the Corporation and Competition: Preliminary Remarks," in Khemani, Shapiro, and Stanbury (eds.), Mergers, Corporate Concentration and Power in Canada, Chapter 4 (Montreal, Canada: The Institute for Research on Public Policy, 1988), 91-106; republished in Faulhaber and Tamburini (eds.), European Economic Integration: The Role of Technology (Norwell, MA: Kluwer Academic Publishers, 1991), 177-200.
- 18) "Collaborative Arrangements and Global Technology Strategy: Some Evidence from the Telecommunications Equipment Industry" (with G. Pisano) in Robert A. Burgelman and Richard S. Rosenbloom (eds.), Research on Technological Innovation, Management and Policy, Vol. 4 (Greenwich, CT: JAI Press, 1989), 227-256.
- 19) "Contributions and Impediments of Economic Analysis to the Study of Strategic Management," in James W. Fredrickson (ed.), <u>Perspectives on Strategic Management</u> (Toronto and SF: Harper Business, 1990), 39-80.
- 20) "Capturing Value Through Corporate Technology Strategies," in John de la Mothe and Louis M. Ducharme (eds.), <u>Science, Technology and Free Trade</u> (London and NY: Pinter Publishers, 1990), 69-84.
- "Natural Gas Distribution in California: Regulation, Strategy, and Market Structure," (with Michael V. Russo) in R. Gilbert (ed.), Regulatory Choices: A Perspective on Developments in Energy Policy (Berkeley: University of California Press, 1991), 120-186. Abstracted in C. Michael Lederer (ed.), California Energy Policy: The Regulated Sector, Proceedings of the California Energy Policy Seminar, September 18-19, 1986 (Berkeley: University Energy Research Group), 33-43.
- "Foreign Investment and Technological Development in Silicon Valley," in D. McFetridge (ed.), <u>Foreign Investment, Technology and Economic Growth</u> (Calgary: The University of Calgary Press, 1991), 215-238.
- 23) "Technological Development and the Organisation of Industry," in <u>Technology and Productivity: The Challenge for Economic Policy</u> (Paris: Organisation for Economic Cooperation and Development, 1991), 409-418.



- "Support Policies for Strategic Industries: Impact on Home Economies," <u>Strategic Industries in a Global Economy</u>: Policy Issues for the 1990s (Paris, OECD, 1991), 35-50.
- 25) "Analisi Economica e Strategic Management," in Luca Zan (ed.), <u>Strategic Management:</u>

 <u>Materiali critici</u> (Torino, Italy: UTET Libreria, 1992), 164-186. Economia d'Impresa,

 Management e Organizzazione del Lavoro, v. 3.
- 26) "Toward a Theory of Corporate Coherence: Preliminary Remarks" (with Giovanni Dosi and Sidney Winter), in Giovanni Dosi, Renato Giannetti, and Pier Angelo Toninelli (eds.), Technology and Enterprise in a Historical Perspective (Oxford: Clarendon Press, 1992), 186-211.
- 27) "The Changing Place of Japan in the Global Scientific and Technological Enterprise" (with David C. Mowery), in Thomas S. Arrison, C. Fred Bergsten, Edward M. Graham, and Martha Caldwell Harris (eds.), Japan's Growing Technological Capability: Implications for the U.S. Economy (Washington, D.C.: National Academy Press, 1992), 106-135.
- 28) "Multinational Enterprise, Internal Governance, and Industrial Organization," in B. Gomes-Casseres and D. B. Yoffie (eds.), The International Political Economy of Direct Foreign Investment (U.K.: Edward Elgar Publishing, 1993), 196-201.
- 29) "Natural Resource Cartels," (with David Sunding and Elaine Mosakowski), in A.V. Kneese and J.L. Sweeney (eds.), <u>Handbook of Natural Resource and Energy Economics</u>, Vol. III, Chapter 24 (Elsevier Science Publishers B.V., 1993).
- "Competition in Local Telecommunications: Implications of Unbundling for Antitrust Policy," with Robert G. Harris and Gregory L. Rosston, in Gerald W. Brock (ed.), <u>Toward a Competitive Telecommunications Industry: Selected Papers from the 1994 Telecommunications Policy Research Conference</u>, (Matwah, New Jersey: Lawrence Erlbaum Associates, 1995).
- 31) "Strategic Alliances and Industrial Research" (with David C. Mowery), in Richard S. Rosenbloom and William J. Spencer (eds.), Engines of Innovation: U.S. Industrial Research at the End of an Era Ch. 3, (Cambridge, MA: Harvard Business School Press, 1996), 111-129.
- 32) "Firm Capabilities and Managerial Decision-Making: A Theory of Innovation Biases" (with Janet E. L. Bercovitz and John M. de Figueiredo), in Raghu Garud, Praveen Nayyar and Zur Shapira (eds.), <u>Technological Innovation: Oversights & Foresights</u> (Cambridge: Cambridge University Press, 1997).
- "Dynamic Capabilities of Firms: A Theoretical Framework," in Christoph F. Buechtemann and Dana J. Soloff (eds.), <u>Human Capital and the Economy</u>, presented to the 1993 Conference on Human Capital and Economic Performance (New York, NY: Russell Sage Foundation, forthcoming).
- "Innovation, Market Structure, and Antitrust: Harmonizing Competition Policy in Regimes of Rapid Technological Change" (with Thomas M. Jorde), in Leonard Waverman, William S. Comanor and Akira Goto (eds.), Competition Policy In The Global Economy: Modalities For Cooperation (London: Routledge, 1997), 289-303.



- 35) "The Uneasy Case for Mandatory Contract Carriage in the Natural Gas Industry," in Jerry Ellig and Joseph P. Kalt (eds), New Horizons in Natural Gas Deregulation (Westport, CT & London: Praeger, 1996), 43-73.
- "Design Issues for Innovative Firms: Bureaucracy, Incentives, and Industrial Structure," in <u>The Dynamic Firm</u>, Alfred Chandler, Peter Hagström, and Orjan Sowell (eds.), Oxford University Press, 1998.
- 37) "Transaction Cost Economics: Its Influence on Organization Theory, Strategic Management, and Political Economy" (with Glenn Carroll and Pablo Spiller), Firms, Markets, and Hierarchy:

 Perspectives on the Transactions Cost Economics (Oxford: Oxford University Press, forthcoming, 1998).

CONGRESSIONAL TESTIMONY

"The Energy Antimonopoly Act of 1979," in <u>Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate</u>, June 21, 1979 (Washington, DC: U.S. Government Printing Office, 1980).

"Statement on U.S. Economic Growth and the Third World Debt," in <u>Hearings before the Subcommittee on International Economic Policy, Oceans, and Environment of the Committee on Foreign Relations, United States Senate, October 9-10, 1985 (Washington, DC: U.S. Government Printing Office, 1986).</u>

"Oil Prices and Debt Crisis" (with Constance Helfat), in Hearings before the Subcommittee on International Economic Policy, Oceans, and Environment of the Committee on Foreign Relations, United States Senate, October 9-10, 1985 (Washington, DC: U.S. Government Printing Office, October 1986).

"Legislative Proposals to Modify the U.S. Antitrust Laws to Facilitate Cooperative Arrangements to Commercialize Innovation" (with Thomas M. Jorde), in <u>Hearings before the Subcommittee on Economics and Commercial Law</u>, House Judiciary Committee, July 26, 1989.

"Cooperation and Competition" (with Thomas M. Jorde) in <u>Hearings Before the Subcommittee on Science</u>, Research, and Technology of the Committee on Science, Space, and Technology, U.S. <u>House of Representatives</u>, on The Government Role in Joint Production Ventures, September 19, 1989.

"Extending the NCRA" (with Thomas M. Jorde) in <u>Hearings before the Subcommittee on Antitrust</u>, Monopolies and Business Rights of the Committee on the Judiciary, U.S. Senate, July 17, 1990.

PUBLISHED REVIEWS

- "Divestiture and R&D in the U.S. Oil Industry," <u>Reprints: Proceedings of the American Chemical Society</u>, 22:1 (February 1977).
- 2) Review of <u>Crude Oil Prices as Determined by OPEC and Market Fundamentals</u> (by Paul MacAvoy), in <u>Journal of Economic Literature</u>, <u>June 1983, 587-589</u>.



- 3) Review of <u>Vertical Integration and Joint Ventures in the Aluminum Industry</u> (by John Stuckey), in Journal of Economic Literature, 22 (Sept. 1984), 1151-1153.
- 4) Review of <u>Politics</u>, <u>Prices</u>, and <u>Petroleum</u>: <u>The Political Economy of Energy</u> (by David Glasner), in <u>Journal of Economic Literature</u>, 24:2 (June 1986), 722-723.
- 5) Review of International Technology Transfer: Concepts, Measures, and Comparisons (by N. Rosenberg and C. Frischtak, eds.), in Journal of Economic Literature, 25 (March 1987), 160-161
- 6) Review of <u>Investment Choices in Industry</u> (by C. Helfat), in <u>Journal of Economic Behavior and Organization</u> (1989).

COMMENTS AND OPINIONS

- 1) "Alternatives to Government Regulation," Stanford GSB (Winter 1980-81), 2-7.
- 2) "Comment" in E. Mitchell (ed.), Oil Pipelines and Public Policy (Washington, DC: American Enterprise Institute, 1979).
- 3) "Die Hand am Puls," Industrie Magazin, 9 (September 1987).
- 4) Letters to the Editor, "Antitrust Law's Drag on Innovation" (with Thomas M. Jorde), The Wall Street Journal, January 18, 1989.
- 5) "Commentary: The Road to Bangladesh," <u>Strategic Issues</u> (May 1988) (San Jose, CA: Dataquest, 1988).
- 6) "To Keep U.S. in Chips, Modify the Antitrust Laws" (with Thomas M. Jorde), <u>The Los</u> Angeles Times, July 24, 1989, p 5.
- 7) "Harnessing Complementary Assets" in Keeping the U.S. Computer Industry Competitive: Defining the Agenda (Washington, DC: National Academy of Engineering, 1989).
- 8) Letters to the Editor, Harvard Business Review, 90:3 (May-June 1990), 215.
- 9) "Prefazione," in Patrizia Zagnoli, <u>I Rapporti Tra Imprese Nei Settori ad Alta Tecnologia il Caso della Silicon Valley</u> (Torino, Italy: G. Giappichelli, 1991) VII-IX.
- 10) "Foreword," in George Richardson, <u>Information and Investment</u> (Oxford University Press, 1991).
- 11) "Commentary for the Complex Case of Management Education," <u>Harvard Business Review</u>, September-October 1992.
- 12) "Innovation and Competitive Policy," Trade Practices Law Journal, 5:1 (March 1997), 73-77.
- 13) "Recent Developments in Merger Analysis: Unilateral Competitive Effects," <u>Trade Practices</u> <u>Law Journal</u>, 5:4 (December 1997), 270-271.